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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,516	04/15/2005	Peter Etzold	3283	6191

7590 01/03/2007	**EXAMINER**
Striker Striker & Stenby	ZHANG, JUE
103 East Neck Road	
Huntington, NY 11743	

	ART UNIT PAPER NUMBER
	2892

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/03/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

PTOL-90A (Rev. 10/06)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE **3** MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>04/15/2005</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>04/15/2005</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-SB/08)
Paper No(s)/Mail Date <u>04/15/2005</u>.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2.   Claims 7, 8 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 7 claims a computer program having a program code for performing the method of claim 1. Claim 8 claims a data medium having a computer program according to claim 7. A computer software program code not claimed as embodied in computer-readable media are descriptive material per se and are not statutory because they are not capable of causing functional change in the computer. See, e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory).

Claim Rejections - 35 USC § 102

3.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4.   Claims 1-12, 16-17 are rejected under 35 U.S.C. 102(b) as being anticipated by

Keidl et al. (US Patent No. 5,617,007, hereinafter '007).

        For claim 1, '007 teaches a method for operating a line-supplied charger (10)

(Fig. 1) (col. 3, lines 1-40) for a battery (14) in a charge-receiving mode for keeping the

battery in a charged state, in which the battery (14) alternates cyclically (e.g., the float

charging phase, Fig. 3; Fig. 2E) between a resting phase (e.g., the zero current period

of the float charging phase) and a refreshing phase (e.g., the current IX period of the

float charging phase), in which the battery (14), in the resting phase (e.g., the zero

current period of the float charging phase), discharges from an upper threshold voltage

(Vf *1.01) to a lower threshold voltage (Vf*0.99) which is lower than the upper threshold

voltage but is preferably higher than the rated voltage of the battery (Fig. 2E); and in

which the battery (14), in the refreshing phase (e.g., the current IX period of the float

charging phase), is charged again from the lower (Vf*0.99) to the upper threshold

voltage (Vf *1.01) via a charge transformer (36) of the charger (10) (step 274, Fig. 2E);

characterized in that at least individual components, in particular the charge transformer

(36) of the charger (10), are switched off from the line voltage (VIN) during the resting

phase (e.g., the zero current period of the float charging phase)(Step 266, Fig. 2E)

        Claim 2, '007 teaches the limitations of claim 1 as discussed above. It further

teaches that the charge-receiving mode (e.g., float charging phase, Fig. 3; Fig. 2E), the

alternation from the resting phase (e.g., the zero current period of the float charging

phase) to the refreshing phase (e.g., the current IX period of the float charging phase)

takes place whenever the battery voltage has reached or undershot the lower threshold

voltage (**Vf***0.99) (step 274, Fig. 2E).

Claim 3, '007 teaches the limitations of claim 1 as discussed above. It further

teaches that the battery (14) is charged with a predefined constant charging current

during the refreshing phase (e.g., the current IX period of the float charging phase, Fig.

3).

Claim 4, '007 teaches the limitations of claim 1 as discussed above. It further

teaches that in the charge-receiving mode (e.g., the float charging phase, Fig. 3), the

alternation from the refreshing phase (e.g., the current IX period of the float charging

phase) to the resting phase (e.g., the zero current period of the float charging phase) is

effected whenever the battery (14) has been charged to the upper threshold voltage

(**Vf***1.01) or above it (step 266, Fig. 2E).

Claim 5, '007 teaches the limitations of claim 1 as discussed above. It further

teaches that the charge-receiving mode is preceded by a charging mode (e.g., the

constant current charging phase and the constant voltage charging phase of Fig. 3; Fig.

2B), in which the battery (14), in a first phase, is charged preferably with a constant

current to the upper threshold voltage and, in a second phase, is supplied with a

constant charging voltage (e.g., the constant voltage charging phase, Fig. 3; Fig. 2C;

Fig. 2D).

Claim 6, '007 teaches the limitations of claims 1 and 5 as discussed above. It

further teaches that an alternation from the second phase of the charging mode to the

charge-receiving mode, in particular to the resting phase (e.g., the zero current period of

the float charging phase), takes place when the upper threshold voltage has been

maintained with the aid of the constant charging voltage, and simultaneously the

charging current has dropped to a predetermined value that is less than the value of the

constant current in the first phase (see the constant voltage charging phase, Fig. 3;

steps 260-264, Fig. 2D).

Claim 7, '007 teaches the limitations of claim 1 as discussed above. It further

teaches that a computer program having a program code for performing the method of

claim 1 (e.g., the charge is a microcomputer based which is inherently program code as

per flow-chart in Fig. 2)(col. 3, lines 6-8).

For claims 8, '007 teaches the limitations of claim 1 and 7 as discussed above.

Note (col. 3, lines 6-8) which describes the microprocessor 12 is suitably programmed

to perform the method as illustrated and described with respect to FIGS. 2A-2E. While

not explicitly stated as carried by a computer readable medium, the code must

inherently encoded on a computer readable data medium, since it would be impossible

for the program to operate in the manner described in (col. 3, lines 6-8), and elsewhere

in the reference, absent being embodied on or in some form of computer readable

medium.

For claim 9, '007 teaches a charger (10)(Fig. 1) (col. 3, lines 1-40) for charging a

battery (14) from a line voltage (VIN), including:

a charge transformer (36) for transforming the primary line voltage (VIN) into a

secondary voltage;

a rectifier, which is connected downstream of the charge transformer (36)(e.g.,

the BRIDGE and the transformer XFRM in the 36) (col. 3, lines 35-36) on its secondary

side, for furnishing a charging voltage for the battery from the secondary voltage;

and a control unit (Fig. 1; Fig. 2E; col. 3, 30-40) for triggering the rectifier (36) via

a control signal [e.g., the output of (34)] in response to the charging voltage, in particular

in such a way that the battery (14), after its charging phase, is kept in its charged state

in that the battery (14) alternates cyclically (e.g., the float charging phase, Fig. 3)

between a resting phase (e.g., the zero current period of the float charging phase), in

which the battery discharges from an upper threshold voltage (Vf *1.01) to a lower

threshold voltage (Vf*0.99) which is lower than the upper threshold voltage but

preferably greater than the line voltage of the battery (e.g., the charger is structurally

capable to be programmed by the microprocessor 12 to meet the limitation), and a

refreshing phase (e.g., the current IX period of the float charging phase), in which the

battery (14) is charged again from the lower to the upper threshold voltage (Vf *1.01) via

the charge transformer (36) of the charger (10)(Fig. 1, 2E, 3; col. 3, lines 1-40);

characterized by a first comparator for generating a first comparison signal (e.g.,

it is implemented by the microcomputer in the step 284; Fig. 2E), when the battery

voltage at the end of the refreshing phase has reached or exceeded the upper threshold

voltage (Vf *1.01)(e.g., the charge is structurally capable to perform the function for

monitoring the battery voltage through 16, 18 and compare with the upper threshold

voltage by microprocessor 12; Fig. 1, 2E, 3; col. 3, lines 1-40);

and a switching device (32) for switching off at least the charge transformer (1),

during the resting phase (e.g., the zero current period of the float charging phase), from

the line voltage (VIN) in response to a switching signal (charge on/off), which represents

the first comparison signal (Fig. 1, 3; col. 3, lines 30-40; col. 2, lines 63-67).

Claim 10, '007 teaches the limitations of claim 9 as discussed above. It further

teaches that a second comparator for generating a second comparison signal (e.g., it is

implemented by the microcomputer in the step 272; Fig. 2E), when the battery voltage

at the end of the resting phase has reached or undershot the lower threshold voltage

(Vf*0.99)(e.g., the charger is structurally capable to perform the function for monitoring

the battery voltage through 16, 18 and compare with the upper threshold voltage by

microprocessor 12 with proper software; Fig. 1, 3; col. 3, lines 1-40)(col. 2, lines 63-67).

Claim 11, '007 teaches the limitations of claims 9 and 10 as discussed above. It

further teaches that an OR logic module for furnishing the switching signal (CHARGER

ON/OFF) for the switching device (32) as an OR linkage from the first and the second

comparison signals [e.g., the OR module function as defined in papa 0015-0016 is

implemented in the sequential steps (step 284 and step 272 in particular) of the flow

chart Fig. 2E, and carried out by the microprocessor 12].

Claim 12, '007 teaches the limitations of claims 9-11 as discussed above. It

further teaches that the two comparison signals are synchronized with one another in

such a way that upon generation of the first comparison signal, the second comparison

signal is also converted to a state such that the switching signal (32) at the output of the

OR logic module assumes a state which switches off the switching device (10) [e.g., the

synchronization function is implemented in the sequential steps of the flow chart Fig.

2E, and carried out by the microprocessor 12].

Claim 16, '007 teaches the limitations of claim 9 as discussed above. It further

teaches that the control unit, the first and second comparators, and/or the OR logic

module (180) are realized as an integrated circuit, preferably as a microcontroller or

microprocessor (12) with a suitable computer program [e.g., the program is inherently

exist in order for the microprocessor (12) to perform the sequential steps of the flow

chart Fig. 2E] (col. 2, lines 63-67).

Claim 17, '007 teaches the limitations of claim 9 as discussed above. It further

teaches that the comparators (step 284; Fig. 2E) are embodied by analog hardware

(col. 2, lines 63-67)(col. 6, lines 10-11).

Claim Rejections - 35 USC § 103

5.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> A patent may not be obtained though the invention is not identically disclosed or described as
> set forth in section 102 of this title, if the differences between the subject matter sought to be patented
> and the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

6.   Claims 13-14 is rejected under 35 U.S.C. 103(a) as being unpatentable over

Keidl et al. ('007), in view of Faulk (US Patent No. 5,459,652, hereinafter '652).

For claims 13-14, '007 teaches the limitations of claim 9 as discussed above.

'007 does not explicitly teach that a supply transformer (36) for supplying the control unit

(2,3,4), on its secondary side, with a supply voltage. '007 does not explicitly teach that

the supply transformer is connected downstream of the switching device (32) and with

its primary side is connected parallel to the charge transformer (36).

However, in an analogous art, '652 teaches a power supply (Fig. 3; Abstract)

which uses a supply transformer (42)(46) on the secondary side of transformer (28) and

at the downstream of the switching device (32) with a boot strip circuit (82, 90) to supply

a voltage to the switching control circuit (36).   It further teaches that by using the circuit

for the powering the control circuit of the switching power supply in order to assure low

power during normal operation and safe operation all times (Abstract).

Therefore, the subject matter as a whole would have been obvious to one of

ordinary skill in the art at the time the invention was made to have used the supply

transformer circuits (42)(46) with the boot strip circuit (82, 90) of '652 to power the

charging control unit of the switching power supply charging transformer of '007, as

taught by '652, in order to have assured low power during normal operation and safe

operation all times, because '652 has demonstrated that it is a suitable method in order

to have assured low power during normal operation and safe operation all times.

7.   Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keidl et

al. ('007), in view of Faulk as applied to claim 13, and further in view of Shiral et al. (US

Patent No. 6,434.025, hereinafter '025).

For claims 13-15, '007 teaches the limitations of claim 9 and 13 as discussed

above. '007 does not explicitly teach that the supply transformer is connected upstream

of the switching device and is coupled with its primary side to the line voltage (AC).

However, in an analogous art, '025 teaches a switching power supply (Fig. 13; Abstract)

using a supply transformer (101, 102) to power the control circuits. '025 teaches that

the supply transformer (101, 102) is connected upstream of the switching device (Tr1,

Tr2), and is coupled with its primary side to the line voltage (AC). It further teaches that

by using the supply directly from the AC for powering the control circuit it can fail-safe

monitor not only an excessive power supply output, but also for an abnormal drop in

output level (Abstract). Therefore, the subject matter as a whole would have been

obvious to one of ordinary skill in the art at the time the invention was made to have

used the supply transformer (101, 102) of '025 to power the charging control unit of the

switching power supply charging transformer of '007, as taught by '025, in order to have

fail-safe monitored not only an excessive power supply output, but also for an abnormal

drop in output level, because '025 has demonstrated that it is a suitable method in order

to have fail-safe monitored not only an excessive power supply output, but also for an

abnormal drop in output level.

8.   Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Keidl et

al. ('007), in view of Usui et al. (US Patent No. 5,345,094, hereinafter '094).

For claim 18, '007 teaches the limitations of claim 9 as discussed above. "007

does not explicitly teach that the switching device of the charger is embodied as an

opto-triac. However, in an analogous art, '094 teaches a power device which includes

both optical triac and an output-stage triac in one substrate. It further teaches that the

power device can be used as a power controller to control a high AC voltage and large

current (col. 1, lines 25-66).

Therefore, the subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made to have used the optical triac as the switching device of the charging system of '007, as taught by '094, in order to have controlled the high AC voltage and large current of the charging system, because '094 has demonstrated that it is a suitable method in order to have controlled the high AC voltage and large current by using the optical triac as the power switch.
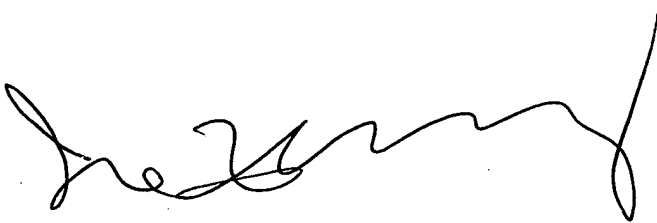
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jue Zhang whose telephone number is 571-270-1263. The examiner can normally be reached on M-Th 7:30-5:00PM EST, Other F 7:30-5:00PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, MICHAEL CLEVELAND can be reached on 571-272-1418. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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